

BOMSEL et al.  
Appl. No. 10/579,921  
Atty. Ref.: 3665-180  
Amendment  
September 11, 2009

REMARKS

Reconsideration is requested.

Claims 1-22, 35 and 39, have been canceled, without prejudice. Claims 23-33 and 42-44 have been withdrawn. Claims 23-33 and 42 have been revised, without prejudice, to place the claims in condition for rejoinder and allowance with the product claims under active consideration. Claims 23-34, 36-38 and 40-44 are pending.

Rejoinder and allowance of any claim defining a method of making and/or using a product defined by an allowable claim, at an appropriate time, are requested.

The objection to claim 40 is obviated by the above amendments. The objection to claim 36 is traversed. Reconsideration and withdrawal of the objection is requested in view of the above and the following comments.

The Examiner is urged to appreciate that SEQ ID NO:17 is recited in claims 36 and 40. The Examiner's reference to SEQ ID NO:16 is noted however SEQ ID NO:16 refers to the sequence Cys Xaa Xaa Xaa Glu Cys whereas SEQ ID NO:17 refers to the sequence Cys Xaa Phe Glu Glu Cys which corresponds to the peptide sequence C-X-F-E-E-C of claims 36 and 40

Withdrawal of the objection is requested.

The Section 112, second paragraph, rejection of claims 34, 35, 38, 39 and 41 is obviated by the above amendments. The objected-to terms and phrases have been deleted from the claims, without prejudice. The claims are submitted to be definite. Withdrawal of the Section 112, second paragraph, rejection is requested.

To the extent not obviated by the above amendments, the Section 112, first paragraph "written description", rejection of claims 34, 35 and 41 is traversed.

The objected-to "variants" and "derivative" have been deleted above, without prejudice. Contrary to the Examiner's assertion, the specification describes a correlation between structure and function of the claimed compounds. The structure of cyclic peptides of the invention comprises a tripeptide of formula F-E-E representing the human binding site of fertilin  $\beta$  to integrin of the oocyte. The inventors demonstrated in the first example of the application, for example, that this tripeptide FEE induces displacement of adhesion proteins to the oocyte surface and increases the fusiogenic capacity of oocytes. Thus, this tripeptide mimics the mechanism by which the spermatozoon induces molecular fusion complexes on the oocyte upon contact with the oocyte membrane and therefore facilitates the fusion process.

One of ordinary skill will appreciate from the present specification as well as the generally advanced level of skill in the art that the number and the type of amino acids surrounding the FEE tripeptide can be extremely variable considering that the function of the peptide of the invention is based on the presence of the FEE sequence. One of ordinary skill in the art will appreciate from the present specification that the applicants were in possession of the claimed invention at the time the application was filed.

Withdrawal of the Section 112, first paragraph "written description", rejection is requested.

The Section 101 rejection of claims 34 and 41, which is understood to have been based on the recitation of derivative and variant, is obviated by the above amendments. Withdrawal of the Section 101 rejection is requested.

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The Section 102 rejection of claims 34, 35, 38 and 41 over Myles (PNAS, Vol. 91, pages 4195-4198, 1994), is traversed. The reference fails to teach each and every aspect of the claimed invention. Withdrawal of the Section 102 rejection is requested.

The Section 102 rejection of claims 34, 35, 38, 39 and 41 over Krstenansky (BBA, 957 (1988) 53-59), is traversed. Reconsideration and withdrawal of the rejection are requested as the cited art fails to teach each and every aspect of the claimed invention, such as wherein m+n is less than or equal to 5.

The Section 103 rejection of claims 34-41 over the combination of Gupta (Bioorganic and Medicinal Chemistry, Vol. 8 (2000), pages 723-729), Bronson (Molecular Human Production, Vol. 5 (1999), pages 433-440) and Myles (PNAS, Vol. 91, pages 4195-4198 (1994)), is traversed. Reconsideration and withdrawal of the rejection are requested in view of the above and the following distinguishing remarks.

The applicants believe that Gupta, relates to fertilinBeta which contains a highly conserved motif (D/E) ECD which could be a consensus sequence. Gupta further disclose cyclic peptides comprising this motif and exhibiting an inhibitory effect on fertilization (page 725, left column, second paragraph).

The article of Bronson relates to a linear peptide containing the tripeptide FEE. Bronson disclose that the FEE containing peptide inhibits sperm adhesion to oocytes and their penetration. Linear peptides disclosed in Bronson are thus inhibitors of fertilization (abstract).

Myles relates to the use of peptide analogues to study the role of fertilinBeta. Myles teach the cyclized peptide CSTDEC as a strong sperm-egg inhibitor (abstract).

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The cited combination of art would not have led one of ordinary skill in the art to have made the claimed invention. The combination of cited art would not have motivated one of ordinary skill in the art to have made peptides corresponding to particular regions of the human fertilinBeta protein, in particular the FEE sequence.

One of ordinary skill in the art would not have reasonably predicted from the cited combination of art that the cyclic peptides of the present invention would, for example, increase the fusiogenic capacity of the oocyte.

On contrary, the peptides described in Gupta, Bronson and Myles are inhibitors of fertilization. Consequently, the activity of the peptide of the invention is the opposite of the activity of the peptide described in the cited art. Furthermore, none of the cited documents, or their combination, would have suggested to one of ordinary skill in the art that the cyclic peptides of the presently claimed invention exhibit the surprising ability to increase the fusiogenic capacity of the oocyte and thus be used as an activator of the fertilization.

The claimed invention would not have been obvious from the cited combination of art. Withdrawal of the Section 103 rejection is requested.

The claims are submitted to be in condition for allowance and a Notice to that effect is requested. The Examiner is requested to contact the undersigned, preferably by telephone, in the event anything further is required in this regard.

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Respectfully submitted,

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